SECTION 2

Predesign Study

This section describes the key elements and submittal requirements of the Predesign Study.

2.1 Introduction to the Predesign Study NEW!

What is the purpose of the Predesign Study?

Key to the success of any capital project is a clear, accurate, and specific understanding of the facility need/problem to be addressed—and a thoughtful analysis of the options to meet the need or solve the problem.

During the Predesign process the agency or institution answers a specific set of questions designed to ensure full understanding of the alternatives available to resolve the facility issue that has been identified. These questions involve the refinement of the definition of scope, project management, schedule, quality, budget and location of a project by answering the questions of who, why, what, where, when, and how much? Completion of the Predesign Study is the second step in acquiring funding for the design and construction of the proposed solution from the Legislature and Governor. Figure 1 shows the Predesign Study as part of the capital project process and its relationship to the Project Request Report, Design and Construction.

While the Predesign is a solid foundation from which to begin design, it does not impose constraints that cannot be altered during the design process when additional information becomes available. Reasonable flexibility, within legislative intent, during the design and construction process is expected and encouraged.

The Predesign Study involves data collection, analysis, organization, communication, and evaluation through which all elements of a facility's design shall be explored. It includes the establishment of an agency or institution's programmatic, qualitative, financial, schedule requirements, and limitations for a project. It should explore the physical attributes of a facility, as well as the design response to meet facility needs.

Benefits of Predesign

Experience has shown that high quality Predesign studies provide a number of benefits:

- Better planning by agencies and institutions yields better results;
- Agencies and institutions have an opportunity to uncover alternatives that had not been previously considered;
- Agencies and institutions make more informed decisions with more complete information;
- Risk can be identified and minimized through a more rigorous process;
- Agencies and institutions can improve internal program planning and cost or schedule issues not previously known can be explored before large sums of money are invested;
- An opportunity is afforded to review total project budgets prior to the design phase; and
- Long-term planning offers a potential for cost savings.

When is a Predesign Study required?

Major projects—those with an estimated cost of $5 million or more, that are particularly time sensitive, high risk, or that incorporate state-of-the-art technology—are required to conduct a Predesign Study. Projects under $5 million should include a predesign phase when the project has significant policy implications or technical, logistical, or cost concerns to a program or agency. Although this Manual is designed for major projects, it can also be followed for these smaller projects.

Use of Consultants

Typically much of the work to produce a Predesign Study is undertaken by the agency or institution, but it is common for professional consultants to be hired to complete the required technical aspects.

However, it is the intent of OFM that all possible portions of the work be prepared by staff of the agency or institution.

Audience

The Predesign document is used by various audiences. Interested parties include: the project design team; agency or institution project staff and management; agency or institution executive management; Legislature; OFM; Department of General Administration; and the public. With this in mind, this manual has been prepared to promote consistency between Predesign Studies submitted by various agencies and institutions.

Overview

The Predesign Study should provide the following information regardless of which options analyzed in the study are selected:

- A description of the needs to be met – the problem;
- An architectural/functional program and thorough explanation of the scope of work;
- An analysis of potential and recommended project site(s);
- A professionally prepared project budget in the format of the Project Cost Estimate Worksheet (revised Form C-100);
- Cost/benefit and life-cycle cost information for major decisions involving economic trade-offs;
- A discussion and recommendation regarding the project delivery and project management process to be used; and
- A complete set of conceptual or preliminary drawings (prior to schematic design phase).

Predesign Study Funding Standards

Appropriations should be obtained through the budget process prior to proceeding with a study in order to cover the costs and establish legislative intent for the project. Predesign Studies are required to be completed early in the capital budget process so that informed decisions can be made whether to fund the design of the proposed project.

Following submittal and approval of a Project Request Report, agencies may be provided with an appropriation to assist in conducting a Predesign Study. The Contents section of this manual describes those sections of the study that these funds will finance. The amount of funds appropriated for a Predesign Study will be based on the on the standards below:

Predesign Study Funding Standard

	Project Cost in Millions			
Type of Project	**$5 - $10**	**$10 - $20**	**$20 - $40**	**OVER $40**
Complicated	1.35%	1.10%	0.75%	0.65%
Standard Design	1.20%	0.90%	0.65%	0.55%
Uncomplicated	1.00%	0.70%	0.50%	0.50%

Note: Percent is based on total estimated project cost.

Building Quality Standards

Building quality must also be considered in the Predesign Study. OFM has adopted the Building Quality Guidelines developed by the General Services Administration (GSA). The guidelines are in the form of an outline specification and can be found in Appendix D.

2.2 About the Instructions

Submittal Timing

The Predesign Study submittal establishes the project budget for design and construction funding if approved. To qualify a project for consideration in the next biennial capital budget, the Predesign Study should be submitted no later than July 1 of even-numbered years.

Review Authority

Capital Budget instructions require that the Predesign Study be submitted to the Office of Financial Management for review and approval:

> "To ensure that major construction projects are carried out in accordance with legislative and executive intent, appropriations in this act referencing this section or in excess of $5 million shall not be expended until the office of financial management has reviewed and approved the agency's **predesign** and other documents and approve an allotment for the project."

Review Process

OFM has developed a process for conducting this evaluation entitled Budget Evaluation Study Team (BEST). BEST review is used on selected predesigns. The reviews are conducted by an independent qualified multi-disciplined team using Value Engineering (VE) methodology. Other Predesign Studies are evaluated in-house by OFM capital budget staff.

The fact that a Predesign Study is reviewed by either OFM technical staff or an independent BEST team encourages a better Predesign Study. The result is tighter, more cost effective designs, early identification and resolution of staff issues, lower costs, and improvements in safety, security, and aesthetics.

OFM has structured both the in-house review and BEST review of Predesign Studies to analyze the following:

- **Prevention of Project Scope Creep** – Reviews are designed to ensure the inclusion of all needed program elements and eliminate the elements that are not necessary to meet the project intent or scope. Scope creep occurs when missing items in a project are discovered late in design development resulting in costly changes and additions to the project scope. Performing a thorough review of the study helps to establish an appropriate budget to which the project may adhere right from the start.

- **Space and Quality Standards –** Reviews analyze both facility space requirements and construction materials proposed to ensure compliance with established standards. In some designs, the program allocating space does not meet the project's real needs, or is used inefficiently. By analyzing the Predesign Study, the functional requirements of the project can be adjusted without detracting from the essential function.

- **First Cost and Life-Cycle Cost Analysis –** Reviews provide the opportunity for cost savings while still meeting project improvements. Life-cycle costs are addressed during design but usually not stressed. During the review of a Predesign Study, the greatest opportunity exists to change designs, which can impact not only the first cost but also more importantly, the life-cycle costs.

Energy Management Systems – The cost of energy consumed by energy management systems and renewable energy systems in state facilities and the maintenance of the systems shall be considered in addition to the initial coast of constructing such systems.

State law now requires that the design and use of energy systems in publicly owned and leased facilities include consideration of renewable energy resources (solar, wood or wood water), other non-conventional fuels and energy management systems. Contact the Energy Section, Division of Engineering and Architectural Services, Department of General Administration at (360) 902-7194 or 902-7272 for technical assistance.

During the review process, both the agency or institution and the Predesign consultant(s) may be contacted to provide additional information and detail to OFM and the BEST team. Agencies and institutions should understand this requirement and make appropriate arrangements for the time and cost to participate.

The following section describes the key elements and submittal requirements of the Predesign Study Report.

2.3 Contents of a Predesign Study

The Predesign Report is an eight-part report with an appendix.

Use the Project Request Report to update and detail information on the proposed project.

Predesign Studies should have the following standard sections:

1.0 Executive Summary

2.0 Project Analysis

3.0 Program Analysis

4.0 Site Analysis

5.0 Project Budget Analysis

6.0 Master Plan and Policy Coordination

7.0 Facility Operations and Maintenance Requirements

8.0 Project Drawings/Diagrams

9.0 Appendix

The sections of a Predesign Study allow for some flexibility in required content based on the needs of the project. For example, an addition to a building may not need an analysis of several sites or a new geotechnical study.

The following pages contain a generic model for a complete Predesign Study that will be followed by all agencies and institutions when requesting approval for major projects. When a section is not necessary, justification of the omission must be provided in that section of the document.

Build upon the information generated earlier by the Project Request Report.

Any other information the agency or institution believes would be helpful should also be included as an appendix to the document. OFM may require additional information for unique projects. *Note: Predesign Studies must be organized in the format as shown in this section*

Executive Summary

The Executive Summary section presents essential and high-level information about the project to agency or institution management and various stakeholders. It summarizes material that is presented in subsequent sections. The material in the Executive Summary should not require an extensive technical background to understand.

Use of Consultants

The Executive Summary should be written by the agency or institution.

Project Analysis

The Project Analysis section describes the scope of the project, provides background information, analyzes the project need (problem to be solved), identifies alternatives to meet the need, and the proposed solution.

The information in this section describes the mission, goals, objectives, and legislative or executive intent of the proposed project. The agency's statement of need for the project and how it fits with the agency's strategic or business plan are addressed. This section contains an analysis of the project purpose, solutions, its reasonableness, cost and benefits, as well as anticipated time schedule for the project are also included.

This section also includes a description of each alternative considered. This includes not only various methods of meeting the needs of the project such as remodeling vs. new construction, but also includes the management method to be used. If an alternative methods contracting process – design-build or general contractor/construction manager, (GC/CM) – is recommended, it should be so stated in this section and corresponding costs included in the Project Budget Analysis Section.

Project Description

Use of Consultants

The Project Analysis Section should be completed by the agency or institution.

- Agency Name – Name of agency requesting funding.
- Agency Code – Three-digit agency code number.
- Project Identifier – Six-digit project identifier assigned to the project in the capital budget.
- Project Title – Titles are to convey location, project type, and scope – see Office of Financial Management's *Capital Plan Instructions*.
- Agency Contact – Name, address, and phone number of person(s) responsible for preparation of Predesign Study.

Project Description and Scope

- Mission – Brief mission statement of the agency or institution as it relates to the requested facility.
- Goals – Describe the goals that will be met by this project
- Administration – Policy, program, and service.
- Facility – Technical and facility needs.

Background

- Existing Facilities – Description of any other existing facilities that will be affected by this project.
- Previous Action Taken – Provide project planning and request history. Exhibit if the project is in the current ten-year plan, or if it has been in prior versions.
- Legislative or Executive Intent – Results of previous legislative, executive, or agency action that affects this project.

Analysis

Purpose of Project – Problem Statement – A statement that defines the specific problem or objective that creates the need for the project. The project should be consistent with the standards, objectives, and policies of the agency and the state.

Project Proposal – Solution – Describes in brief and accurate detail the proposed solution to the problem. Identifies the estimated useful life of the capital improvement, total project cost, and anticipated project milestones including date of completion. Also, describes how the project fits with the agency strategic or business plan.

Alternatives Considered – Give a brief description of each alternative that was considered and the reasons for rejecting of each alternative that is not adopted.

Affected Organizations and Stakeholders – List all other agencies or organizations to be affected by or involved in this project.

Project Management

Identifies the preferred management method of design and construction to meet the agency or institution's desired schedule. Costs should be developed to reflect the proposed project management approach. The Predesign Study should address the following issues.

Management Organization – This section describes the agency or institution's ability to manage the design and construction of the project. An assessment of the staff's technical capability, experience, and staffing needs in reviewing and approving design and construction work should be included. Identify any costs for consultant services or for additional staff.

Methods of Accomplishment – Identifies one or more techniques to be used such as design-build, phased construction, fast tracking, general contractor/construction manager (GC/CM), or conventional design - bid - build. Each of these methods has an influence on the quality, cost, and timeliness of providing the required facilities.

Recommended Strategy – Outlines duties of agency staff and contracted consultants. Defines major steps of the process, and recommends methods of accomplishment and areas of responsibilities for each.

Schedule

A milestone schedule for the project, including budget approval, design, bid, construction, equipment installation, testing, start-up, and full operation. Project phases, long lead items, and critical path milestones should be identified. The schedule should reflect the recommended specific method of acquisition as discussed above.

Program Analysis

The Program Analysis section identifies the requirements of all spaces to be included in the design of the facility. This section is the largest and most important section of a Predesign Study. The requirements should not be unnecessarily restrictive in nature, but should clearly and directly express the needs of the agency or institution. This section also analyzes all existing program spaces that will have an effect on the proposed project. For additional detail of the programming process see Appendix A.

Assumptions

Describe assumptions used in defining the requested project.

Existing Facilities

If existing facilities are affected by the proposed project (demolition, renovation) include the following:

Inventory

Are current facilities included in State Facility Inventory System (FIS)? Are they accurately coded?

Condition assessment and serviceability

Current condition as shown on FIS.

Use of Consultants

Consultants may assist the agency or institution with the program portion of the Predesign Study. However, it is important that the user be heavily involved in this process. Final decisions should be made by the agency or institution.

Space Requirements

- Function – The function of each space included in program.
- Relationships
- Condition assessment/serviceability – Current condition as shown on FIS.
- Condition assessment/serviceability – Current condition as shown on FIS.
- Special Requirements

- Voice, Data and Video Communications
- Energy Management Systems
- Power Supply

Future Requirements

Describe any future phases or other facilities that will impact this project.

Codes/Regulations

List all codes and regulations that will have an effect on this project.

- Building Codes – State and local codes
- Energy Codes – (RCW 39.35)
- Environmental – Growth Management
- Other such as local ordinances or special comprehensive plan requirements

Site Analysis

The Site Analysis Section evaluates the various factors to be considered in siting the proposed project. This section should include a list of potential site locations and identify factors such as: zoning, accessibility, public transportation, geotechnical considerations, etc.

Use of Consultants

Consultants are permitted to conduct the tasks required in the Site Analysis Section. Major input should be provided and decisions made by the agency or institution.

Process

Describe the site selection process used by the agency or institution.

Evaluation of Potential Sites

- Identify all potential sites considered for this project.
- Cultural Factors
  - Site History
  - Land Use, Ownership and Control
  - Economic Value

- Physical Issues and Constraints
  - Climate
  - Topography
  - Geotechnical/Soils
  - Utilities
  - Immediate Surroundings
  - General Services

- Regulatory Factors
  - Zoning Codes
  - Local Requirements
  - Environmental Regulations
  - Building Codes and Requirements

- Access Issues

- Site Accessibility

- Transportation and Parking

- Utilities

- Energy Conservation

Preferred Site(s)

- Advantages

- Disadvantages

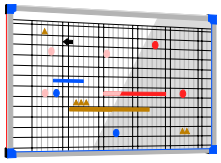
Conclusions

- Recommended Alternative

- Cost Estimate Comparisons (Life Cycle Cost Analysis of alternatives)

- Conceptual Drawings – See Section 8 Project Drawings/Diagrams Section

Project Budget Analysis



The Project Budget Analysis Section contains a narrative of the major assumptions used in preparing the cost estimate, an outline specification of materials and methods, and the completed Agency/Institution Project Request Form C-100. It also includes cost benefit analyses of the alternatives considered.

See Appendix C for detailed information on items to be included in the Project Budget Analysis. Following is a list of items to be included:

Narrative

- Written outline of major assumptions used for preparing the cost estimate.

Outline Specifications

- Basic summary of the project based on the major systems or components (Uniformat).

Detailed Cost Estimate

- Agency/Institution Project Request
- OFM Form C-100 – For traditional design/bid/build projects and also revised for alternative public works methods such as Design-Build or GC/CM. Form C-100A has been eliminated.

Cost Benefit Analysis/Life Cycle Cost Analysis

- Description of existing program and facilities
- Most appropriate alternative to solve problem
- Other alternative(s) studied, including economic trade-offs
- For better materials and systems to improve life cycle cost. The consequences of not proceeding with the preferred alternative should be analyzed as an alternate

Use of Consultants

The Project Budget Analysis Section should be completed by a Certified Cost Engineer or a professional cost consulting firm. Professional cost estimators may be a consultant if not employed by the agency or institution.

Master Plan and Policy Coordination

The Master Plan and Policy Coordination Section relates the project to any applicable agency or institution or controlling plan (e.g., Thurston County or Capitol Campus Master Plans or agency Capital Master Plan). Proposed changes to the master plan as a result of the Predesign Study should be discussed in this section. In addition, this section addresses how the project responds to a major legislative action or policy initiatives.

Thurston County Master Plans

Describes how the proposed project does or does not conform to the master or subcampus plans for the state capitol, including revisions.

Other Significant State Policies

Describes how the proposed project adheres to policies such as the Governor's executive orders on Environment 2010 and Workforce 2000, the Growth Management Act of 1990, revisions to the state's policy on indoor air quality, Energy Conservation in Design of Public Facilities, the Clean Air Act of 1991, and others that may affect the project.

Use of Consultants

The Master Plan and Policy Coordination Section should be completed by the agency or institution.

Facility Operations and Maintenance Requirements

The Facility Operations and Maintenance Requirements Section defines the project's impact on the operating budget for the agency or institution in the next biennia. Items such as program staffing, operations, maintenance of the facility's mechanical and electrical systems, utilities, and internal rents should be discussed in this section

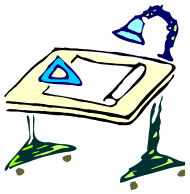
Use of Consultants

The Facility Operations and Maintenance Requirements Section should be completed by the agency or institution.

Items to be included in the Facility Operations and Maintenance Requirements Section include:

- Estimated additional costs of staffing for operations and maintenance of the facility
- A plan for facility maintenance

Project Drawings/Diagrams



The Project Drawings/Diagrams Section contains conceptual (pre-schematic) drawings of the proposed capital construction project in enough detail to describe the project. Site diagrams illustrating various sites and site layouts should also be included. ***Caution* – Drawings/Diagrams should be conceptual or pre-schematic only – Schematic level documents are neither desirable nor required for Predesign.**

Use of Consultants

The Project Drawings and Diagrams may be prepared by consultants to convey the information developed in the Program and Site Analysis Sections

Site Plans

Diagram of spatial needs of the project requirements including building footprint, massing, parking, access, circulation and open spaces, to include special constraints and requirements.

Building Plans

Generalized spaces representing program elements organized in realistic relationships (conceptual drawings).

Building Volumes

Generalized block diagrams representing building massing and configuration as it relates to the site and surrounding structures.